

2014 Stellafane Convention

The 79th Convention of Amateur Telescope Makers on Breezy Hill in Springfield, Vermont

43° 16' 41" North Latitude, 72° 31' 10" West Longitude

Thursday, July 24 to Sunday, July 27, 2014

"For it is true that astronomy, from a popular standpoint, is handicapped by the inability of the average workman to own an expensive astronomical telescope. It is also true that if an amateur starts out to build a telescope just for fun, he will find before his labors are over that he has become seriously interested in the wonderful mechanism of our universe. And finally there is understandably the stimulus of being able to unlock the mysteries of the heavens by a tool fashioned by one's own hand."

—Russell W. Porter, Founder of Stellafane, March, 1923

SOME STELLAFANE HISTORY

In 1920, when a decent astronomical telescope was far beyond the average worker's means, Russell W. Porter offered to help a group of Springfield machine tool factory workers build their own. Together, they ground, polished, and figured mirrors, completed their telescopes, and began using them, soon becoming thoroughly captivated by amateur astronomy. By 1923 they had

formed a club, the Springfield Telescope Makers, and had built Stellafane, our now legendary clubhouse. In 1925 their activities drew the attention of Albert Ingalls, an editor at *Scientific American*. He visited the club, and soon began publishing articles by Porter and others about telescope making. This generated interest across the country, and the club decided to invite other amateurs to visit. On July 3, 1926, 29 people came to Breezy Hill, and The Stellafane Convention was established. It's been held every year since, except during the Second World War. The convention grew rapidly, and today around a thousand enthusiastic amateurs make the pilgrimage to Springfield.



THE SITE

The original Stellafane site on Breezy Hill remains the location for the telescope competition, and of course is where the Stellafane clubhouse and Porter Turret Telescope are located. In 1986, faced with the loss of access to an adjacent field that had been the Convention's camping area, the STM, with the support of members who mortgaged their homes, purchased a 40-acre farm across the road from the original Stellafane site. This became known as Stellafane East. In 1998, STM member Harty Beardsley donated another adjacent 45 acres, ensuring that the Convention has room for growth.

EMERGENCIES AND FIRST AID AT CONVENTION:

In case of emergency please contact Security (by the gate) or any STM member. If you have a family service radio, you may contact convention staff via channel 7 (please avoid non-emergency use of this channel at convention). **First aid kits are located in the Bunkhouse, the McGregor Observatory, and the Pink Clubhouse.** We have trained medical staff on site.

THE STELLAFANE CLUBHOUSE

The clubhouse was designed by Porter and constructed by the members. The pink color may simply have been that of donated paint, but it has been hal-
lowed by long tradition. Although it's now a tight fit with today's larger membership roster, the Springfield Telescope Makers still hold meetings at Stellafane. The original site, including the clubhouse and the Porter Turret Telescope, was designated a National Historic Landmark in 1989. Photo is from 1930s.



THE PORTER TURRET TELESCOPE

The Porter Turret Telescope was constructed in 1930 by the club. Porter, who had endured more than his share of winter cold on polar expeditions early in his career, invented a design that allowed the observer to remain indoors and comfortable on the coldest winter nights. Extensively renovated including new optics in the 1970s, the Porter Turret remains an excellent instrument, and is operated during Convention, night and day (for solar observation). Photo is from 1930s.



THE MCGREGOR OBSERVATORY

The McGregor Observatory at Stellafane East was constructed by the club between 1989 and 1995. It houses a unique instrument—a 13" f/10 Schupmann telescope mounted on a massive computer controlled alt-az mounting. For a time it was the largest operating Schupmann in the world. This design, which combines reflective and refractive elements, yields a coma-free and essentially apochromatic image, and is ideal for planetary observation. The Schupmann is operated during Convention. Photo by Dennis di Cicco.



THE DOMED OBSERVATORY

Stellafane East also hosts a beautiful 10" Ritchey-Chrétien telescope mounted on a Springfield Mount (another Porter design), built by Dino Argentini in 1964 and eventually donated to the club. It is housed in a domed observatory built in 2006, just south of the McGregor Observatory. This telescope's stationary eyepiece is accessible to wheelchair users.



Schedule of Events and Presentations

KIDS=ACTIVITY FOR CHILDREN **TEENS**=ACTIVITY FOR TEENS **NTA**=FOR THOSE NEW TO ASTRONOMY **INT**=INTERMEDIATE **ADV**=ADVANCED
ATM=AMATEUR TELESCOPE MAKING **COMP**=TELESCOPE COMPETITION **ALL**=SUITABLE FOR EVERYONE **MCE**=MAJOR CONVENTION EVENT

THURSDAY, JULY 24, 2014

8:30 am - 5 pm	Hartness House Workshop on Binary & Multiple Star Astronomy	Hartness House	Separate Registration and Fees for this Workshop	
12 noon - 4 pm	Large RV Permit Holders must arrive	Entry Gate	Please don't arrive before noon!	
3 pm - 10 pm	Early Entry Permit Holders can arrive	Entry Gate	Please don't arrive before 3!	
6 pm - 8 pm	Hartness House Workshop on Binary & Multiple Star Astronomy	Hartness House	Dinner (Separate Registration)	
8:30 pm -	Observing with the Hartness Turret Telescope	Hartness House	(Weather Permitting)	ALL

FRIDAY, JULY 25, 2014

9 am	Registration Gate Opens			
10 am - 6 pm	Shuttle Bus Operates	Bus Stops: Pine Island, Food Tent, Pink Clubhouse		
10 am - 4 pm	Telescope Making Demo	Tent north of Pavilion		
10 am - 10:30 am	Telescope Making Demo: Intro & Rough Grinding	Tent north of Pavilion	Ray Morits	ATM
10:30 am - 11 am	Telescope Making Demo: Fine Grinding	Tent north of Pavilion	Rick Hunter	ATM
11 am - noon	Astronomy Activities for Children: Craters!	McGregor Observatory Library	Age 5-12; Limited to first 25	KIDS
11 am - 12 noon	Telescopes and Tools - A Journey through Time	Flanders Pavilion	Carl Malikowski	NTA
11 am - 11:30 am	Telescope Making Demo: Making Dental Stone Tools	Tent north of Pavilion	Junie Esslinger	ATM
11:30 am - noon	Telescope Making Demo: Making Pitch Laps	Tent north of Pavilion	Phil Rounseville	ATM
1 pm - 2 pm	Solar Observing with the Internet	Flanders Pavilion	Tom Spirock	INT
1 pm - 2 pm	Solar System Walk	Meet at Green Shed near Clubhouse	Allen Tinker	NTA
1 pm - 5 pm	Stellafane Voyager Project (requires advance signup)	Mirror Lab room in the Flanders Pavilion	Paul Fucile	TEENS
1 pm - 1:45 pm	Telescope Making Demo: Polishing & Figuring	Tent north of Pavilion	Dave Groski	ATM
2 pm - 4 pm	Telescope Making Demo: Testing (Bring your own mirror)	Tent north of Pavilion	Dave Kelly	ATM
2 pm - 3 pm	Astronomy Activities for Children: The Sun, Part 1	McGregor Observatory Library	Age 5-12; Limited to first 25	KIDS
2 pm - 3 pm	Solar Observing Hour	Observing Fields	Please set up your solar scope and share	ALL
2 pm - 3 pm	Imaging Comets: Talk	Flanders Pavilion	Al Takeda	INT
3 pm - 4 pm	The History of the Vermont Astronomical Society - VAS turns 50!	Flanders Pavilion	Jack St. Louis	INT
3 pm - 4 pm	Breezy Hill Rocks! Meet at Pink Clubhouse	Jessica Johnson & Samantha Corallo	A Geology Tour	TEENS
3 pm - 4 pm	Telescope Making Demo: Dobsonian Basics	Tent north of Pavilion	Ken Slater	ATM
4 pm - 5 pm	How to use a Medieval Astrolabe	McGregor Observatory Library	Kristine Larsen	NTA
4 pm - 5 pm	Chasing Shadows: Citizen Science in Occultation Measurement	Flanders Pavilion	Ted Blank	INT
5 pm - 8 pm	Telescope Competition Registration	Tent near Clubhouse	Optical and Mechanical Registration	COMP
5 pm - 8 pm	Hartness-Porter ATM Museum Open	Hartness House	Hosted by Bert Willard, Curator	ALL
6 pm - 7 pm	Free Time	Relax or Enjoy Diner	An hour with nothing scheduled	ALL
7 pm - 8 pm	Introduction to Stellafane	For Convention first-timers, at the McGregor Library	Kim & Dennis Cassia	ALL
7 pm - 8:15 pm	Friday Evening Videos	Flanders Pavilion	Astronomy documentaries for the whole family	ALL
8 pm - 9 pm	Imaging Comets: Demo	near Domed Observatory	Al Takeda Demo	INT
8:30 pm -	Friday Evening Informal Talks	Flanders Pavilion	Bruce Beford, MC Short presentations by Convention Attendees	MCE

10 pm	Registration Gate Closes	Entry Gate	
10 pm	Telescope Optical Competition Begins	Fields around Clubhouse	Optical Competition Begins COMP

SATURDAY, JULY 26, 2014

7 am	Registration Gate Opens	Entry Gate	
7 am - 12 noon	Swap Tables	Swap Table Area - North of Main Camping Area	MCE
8 am - 9:30 am	Telescope Competition Registration	Tent near Clubhouse	Mechanical (and Optical if needed) Registration COMP
9 am - 5 pm	Shuttle Bus Operates	Bus Stops: Pine Island, Food Tent, Pink Clubhouse	
10 am - 4 pm	Telescope Making Demo	Tent north of Pavilion	Organized by Ray Morits ATM
10 am - 11 am	Introduction to Stellafane	For Convention first-timers, at the McGregor Library	Kim & Dennis Cassia ALL
10 am - 1 pm	Telescope Competition Mechanical	Fields around Clubhouse	Mechanical Competition COMP
10 am -	Telescope Field Walk	Meet at Front of Clubhouse	Led by Carl Malikowski and John Vogt NTA
10 am - 10:30 am	Telescope Making Demo: Intro & Rough Grinding	Tent north of Pavilion	Ray Morits ATM
10:30 am - 11 am	Telescope Making Demo: Fine Grinding	Tent north of Pavilion	Rick Hunter ATM
11 am - 11:30 am	Telescope Making Demo: Making Dental Stone Tools	Tent north of Pavilion	Junie Esslinger ATM
11 am - 12 noon	Astronomy Activities for Children: Giant Planets	McGregor Observatory Library	Giant Planets Ages 5-12; Limited to first 25 KIDS
11 am - 12:30 pm	Telescope Making for Teens	Bunkhouse	ages 12-16 Steve Dodson TEENS
11 am - 12 noon	A Dipper Full of Stars	Flanders Pavilion	Richard Sanderson NTA
11:30 am - noon	Telescope Making Demo: Making Pitch Laps	Tent north of Pavilion	Phil Rounseville ATM
1 pm - 2 pm	Solar System Walk	Meet at Green Shed near Clubhouse	Allen Tinker NTA
1 pm - 1:45 pm	Telescope Making Demo: Polishing & Figuring	Tent north of Pavilion	Dave Groski Polishing & Figuring ATM
1 pm - 2 pm	Astronomical CCDs: A Personal History—from the Earliest Times through the Kepler Spacecraft and Beyond	Flanders Pavilion	John Geary ADV
1 pm - 2 pm	Transcribing Treasures: How you can rediscover some of the most exciting discoveries of the 19th & 20th century astronomy	McGregor Observatory Library	David Sliski INT
2 pm - 4 pm	Telescope Making Demo: Testing (Bring your own mirror)	Tent north of Pavilion	Dave Kelly ATM
2 pm - 3 pm	Astronomy Activities for Children: The Sun Part 2	McGregor Observatory Library	Age 5-12; Limited to first 25 KIDS
2 pm - 3 pm	The Visual Observer's Guide to CCD Photometry	Flanders Pavilion	John O'Neill ADV
2 pm - 3 pm	Solar Observing Hour	Observing Fields	Please set up your Solar Scope and Share ALL
3 pm - 4 pm	Telescope Making Demo: Dobsonian Basics	Tent north of Pavilion	Ken Slater Dobsonian Basics ATM
3 pm - 4 pm	Get on that Grit Life	McGregor Library	Jessica Johnson & Samantha Corallo Mirror Making TEENS
3 pm - 4 pm	Optical Coating for Astronomical Observatories	Flanders Pavilion	Tony Pirera ADV
4 pm - 5 pm	Getting started in Astronomy	McGregor Observatory Library	Bruce Tinkler NTA
4 pm - 5 pm	Radio Astronomy for Amateurs	Flanders Pavilion	Jack St. Louis ADV
5 pm - 6 pm	An Introduction to Telescopes for All Ages	McGregor Observatory Library	Alan French NTA
6 pm - 7 pm	Free Time	Relax or Enjoy Diner	An hour with nothing scheduled ALL
7 pm -	Saturday Evening Program & Keynote Talk	Amphitheater (Flanders Pavilion if rain)	Keynote, Shadowgram, Raffle & Awards MCE
10 pm -	Discover and Enjoy the Night Sky	(Held regardless of weather) McGregor Observatory Library	Steve Dodson & John Briggs NTA
10 pm -	Telescope Competition Optical Begins	Fields around Clubhouse	Optical Competition (Only if not held Friday) COMP

SUNDAY, JULY 27, 2014

8 am - 12 noon	Convention Cleanup	Please clean up around your campsite. Please put trash in the dumpsters	ALL
9 am - 12 noon	Hartness-Porter ATM Museum Open	Hartness House	Hosted by Bert Willard, Curator ALL

Event and Presentation Details

ACTIVITIES FOR TEENS & CHILDREN

For ages 5-12

There will be four 1-hour astronomy workshops for children, each session has a different activity. These astronomy workshops have been held at the Stellafane convention since 1995. Led by Dr. Kristine Larsen, of Central Connecticut State University and member of the Springfield Telescope Makers, each of the four 1-hour workshops includes several activities geared for children ages 5 - 12. Younger children are welcome but will need help from a parent.

Location: McGregor Observatory Library. Due to space limitations, each workshop is limited to 25 children on a first-come basis. Each workshop has a different astronomical theme:

- **CRATERS! Friday 11 am to noon**—back by popular demand, we will be making craters in the sand, and children will take home their own cratered surface made out of Play-doh.
- **THE SUN, PART 1, Friday 2 pm to 3 pm**—series of hands-on activities focused on our home star, including a 4-inch model of the active sun. We will also be solar observing if skies are clear.
- **GIANT PLANETS, Saturday 11 am to noon**—Hands-on activities featuring Jupiter and Saturn. Children will take home their very own Saturn (complete with rings) and Jupiter (with red spot) and see how Jupiter's moons compare to our moon.
- **THE SUN, PART 2, Saturday 2 pm to 3 pm**—A different set of hands-on activities involving the sun, including the ever-popular UV beads. Again, we will also be solar observing if skies are clear.

For ages 12-16

- **BREEZY HILL ROCKS!** Friday 3 pm - 4 pm, Meet at Pink Clubhouse, presented by Jessica Johnson & Samantha Corallo. A Geology Tour, starting at the Pink Clubhouse. College students Samantha and Jessica will give a brief, basic background on the overall geology of the area, and then guide the group around Breezy Hill, identifying some of the cool rocks and minerals that can be found.
- **TELESCOPE MAKING FOR TEENS,** Saturday 11 am - 12:30 pm, with Steve "Stargazer" Dodson, at the Bunkhouse. Under Steve's guidance, the group will build an 8 inch Dobsonian Newtonian telescope. Teens aged 12-16 who take part in the entire activity (stay the whole 90 minutes) will receive a special raffle ticket. The winner of the telescope will be drawn at the Saturday night program. You must be present to win and must take the telescope home with you (no shipping is available). Limited to the first 12 participants - so arrive early!
- **GET ON THAT GRIT LIFE,** Saturday 3 pm-4 pm, at the McGregor Library, presented by Jessica Johnson & Samantha Corallo. College students Samantha and Jessica will discuss their ongoing mirror-making experiences—the good, the bad, and the ugly. Learn why mirror making is fun and can be done by anyone with a little patience and good advice.
- **STELLAFANE VOYAGER PROJECT,** Friday 1 pm - 5 pm, in the Mirror Lab room in the Flanders Pavilion, presented by Paul Fucile. New this year. In this 4-hour teen project attendees will learn about building scientific instruments by building their own simulated spacecraft model. Similar to Voyager, this model will have a scientific payload that will collect data and transmit it to a receiver. The details of the payload will be unveiled at the event. During the project, the students will be introduced to basic concepts in electronics, sensors, mechanics, communications and programming. The project will end with attendees using their models to simulate travel through the solar system.

As this is a new endeavor for us, we must limit attendance in this first class to just 10 **pre-registered** teens—no exceptions. If space is not filled through preregistration we will accept others first-come first served at the event, until the class is full.

There will be a lot of specialized instruction, so lateness will not be acceptable, and the attendee's space will be forfeited to those on the waiting list. Be early!

AMATEUR TELESCOPE MAKING

Mirror Making Demonstration

10 am - 4 pm Friday and Saturday (see specific times and topics in schedule on previous pages), tent north of the Flanders Pavilion. This is a HANDS-ON mirror making demonstration. Gain first-hand experience working on mirrors at every stage of grinding, polishing and testing. Experienced ATMs will help explain each step of the process and

answer any questions you may have. The 24" mirror we have been working on for several years will be available for grinding - please sign the log book when you work on it. **Bring your own mirror for testing between 2 and 4 pm either day.**

Dobsonian Basics

3 pm-4 pm Friday and Saturday, tent north of the Flanders Pavilion. Ken Slater, creator of the Stellafane Dobsonian described in the STM web site, takes you through the basics of constructing a simple and inexpensive astronomical telescope that performs well and can be made with common hand tools.

FOR THOSE NEW TO ASTRONOMY

Telescopes and Tools - A Journey through Time

Friday 11 am - 12 pm, McGregor Library, presented by Carl Malikowski. Join us as we explore the world of astronomy and the tools that helped form our present knowledge of our universe. Let's journey through time to see what astronomers had, what and why they were developed, and how some may be deemed quite odd by today's standards.

Solar System Walk

Friday and Saturday 1 pm - Meet at Green Shed near Clubhouse, Presented by Allen Tinker. To illustrate the vast size of outer space, the Springfield Telescope Makers have constructed a scale model of the solar system, based on the Sun at 12 inches in diameter. At that scale, the Earth would be approximately 1/10 of an inch in diameter and 107 feet from the Sun. Jupiter would be 1.2 inches in diameter and approximately 560 feet from the Sun. The "Solar System Walk" begins behind the Pink Clubhouse and proceeds down the road going towards the Stellafane camping area. At the appropriate distance from the scale model of the Sun, there are stations with the appropriate planet, built to scale, and a short description of each planet. The Solar System walk can be taken on your own at any time during the convention. However, a guided walk is available at the times mentioned above, when docent Allen Tinker will provide additional information about the "Solar System Walk" and each particular planet. The walk takes approximately ¾ of an hour, if you walk all the way to the planet Neptune, with a total distance of 3,232 feet or a little over one half of a mile.

How to use a Medieval Astrolabe

Friday 4 pm - 5 pm, McGregor Observatory Library, Presented by Kristine Larsen. This hands-on workshop will introduce you to the parts and simple use (e.g. determining sunrise/sunset/twilight times and using bright stars to tell time) of a medieval astrolabe. Participants will be given a free cardboard astrolabe set to Stellafane's latitude. Limited to the first 25 participants.

Introduction to Stellafane

Friday 7 pm - 8 pm and Saturday 10 am - 11 am, at the McGregor Library, presented by Kim & Dennis Cassia. Are you familiar with these terms: "The Pink," "Tent Talks," or "The Turret"? If not—whether this is your first time attending the Stellafane convention or if you are returning and want to learn more about who the Springfield Telescope Makers are, as well as what is going on during the convention, then this presentation is for you. Topics include, but are not limited to: A short history of Stellafane, a description of our site, including the buildings and landmarks, descriptions of the scheduled talks and activities, services available at Stellafane, local services off site, etc., in addition to answering any questions you may have about the convention.

A Dipper Full of Stars

Saturday 11 am - 12 pm, Flanders Pavilion, Presented by Richard Sanderson. Using stunning images of constellations, planets, and celestial objects, Richard Sanderson will lead an interpretive tour of the summer nighttime sky. He will describe how the sky appears to move throughout the night and from season to season, and explain the significance of the North Star. He will speculate about life on other worlds and show many of the prominent summer constellations. The presentation is aimed at beginners of all ages.

An Introduction to Telescopes for All Ages

Saturday 5 pm - 6 pm, McGregor Observatory Library, Presented by Alan French. Adults and youngsters often become interested in astronomy and acquiring a telescope for exploring the heavens. With the plethora of telescopes on the market, buying your first telescope, or a telescope for a child, can be intimidating. In this program Alan French will cover telescope basics (types, mounts, and eyepieces), telescopes suitable for children, and introduce you to observing and finding sights in the night sky.

Discover and Enjoy the Night Sky

Saturday 10 pm, McGregor Observatory Library, presented by Steve Dodson & John Briggs. Using free Stellarium software, Steve and John will introduce beginners to observing the sky, including identifying the constellations, the Milky Way, and planets. This program will be held regardless of weather, but if weather permits we will work outdoors after a brief, fun introduction in the Library.

Telescope Field Walk

Saturday at 10 am, Meet at Front of Stellafane Clubhouse, led by Carl Malinkowski and John Vogt. During the "Telescope Field Walk" experienced Amateur Telescope Makers will guide small groups through the fields around the Pink Clubhouse, where the telescopes that will be participating in the mechanical competition will be set up. They will describe the various types of optical designs and mounting configurations that will be on display, point out the subtle details that go into award winning telescopes and be available to answer your questions.

Getting started in Astronomy

Saturday 4 pm - 5 pm, McGregor Observatory Library, Presented by Bruce Tinkler. Short interactive topics to get families and children interested in astronomy. Beginning astronomy resource information will be provided and there will be ample opportunity for questions.

INTERMEDIATE LEVEL ASTRONOMY

Solar Observing with the Internet

Friday 1 pm - 2 pm at the Flanders Pavilion, presented by Tom Spirock. One of the characteristics of the Sun that makes observing it interesting is that the Sun is one of the most dynamic astronomical objects that can easily be observed by amateur astronomers. While changes in the details of most astronomical objects take from hours to decades to notice, changes in the features on the Sun can be obvious from minute to minute.

Setting up your own telescope to observe the Sun can be fun and rewarding. However, there are many professional solar observatories which provide observations of the Sun in near-real time. Many of these observatories provide views of the Sun not otherwise available to amateurs, such as non-visible wavelengths, observations of the solar magnetic fields and twenty four hour coverage, via satellite or Earth based network.

This talk will provide an overview of some of the web sites that provide these various views of the Sun and give a description of the images and the information that they provide so that you can supplement your solar viewing with these otherwise unavailable observations.

Imaging Comets

Talk Friday 2 pm - 3 pm at the Flanders Pavilion, **demo Friday 8 pm - 9 pm** near Domed Observatory. Presented by Al Takeda.

As we look up into the night sky we are comforted by the familiar patterns of the constellations, and the permanency of the stars, clusters, nebulas and galaxies. Comets, on the other hand, suddenly appear as a ghostly aberration moving across the heavens. Some of them have been captured by our solar system and periodically visit us. Other comets journey in from deep space, dazzle us with a spectacular display, and return to that realm, never to return.

In this presentation, Al Takeda will discuss how to photograph these elusive objects. Topics will include matching the lens to the comet, using a tripod for imaging, deciding what tracking to use for different effects, and making movies as it traverses the sky. Al will demonstrate comet imaging techniques in real time on Friday evening only. The location will be next to the Domed Observatory.

The History of the Vermont Astronomical Society—VAS turns 50!

Friday 3 pm - 4 pm at the Flanders Pavilion, presented by Jack St. Louis. The history of the Vermont Astronomical Society - the beginning days, construction of 6 observatories, public outreach, education, telescope/mirror making, astrophotography and research/discovery by its talented and dedicated members.

Chasing Shadows: Citizen Science in Occultation Measurement

Friday 4 pm - 5 pm at the Flanders Pavilion, presented by Ted Blank. In this talk, Ted will describe the techniques and equipment used for occultation recording and demonstrate the free software tools you can begin to use immediately to contribute to the discoveries being made by observing, recording and analyzing these fascinating events.

Transcribing Treasures: How you can rediscover some of the most exciting discoveries of the 19th & 20th century astronomy

Saturday 1 pm - 2 pm, at the McGregor Observatory Library, presented by David Sliski. From the 1880s through the 1980s the Harvard College Observatory (HCO) embarked on a journey to repeatedly photograph the entire sky. From traveling west to set up the first telescopes on Mt. Wilson, to voyages to the mountain tops in Peru more than 25 years before the completion of the Panama Canal, to setting up 60" reflecting telescopes in what is now the parking lot at the observatory, HCO pushed the boundaries of the frequency and amount of photography an observatory could do. In total we have more than 500,000 glass plate negatives in the collection today. This continued dedication to astrophotography lead to some of the most important discoveries in astronomy in the 20th century; the Leavitt Law, stellar classification, and understanding that stars are all made of the same material. For more than a century, the plate stacks provided a unique data set to explore rare phenomena in astronomy.

In 2004 a team at Harvard lead by Prof. Jonathan Grinday thought the collection should be digitized. Since then the DASCH, Digital Access to a Sky Century at Harvard team has worked towards creating hardware and software to digitize the plates. Summer 2014 represents the beginning of a three year journey to digitize the rest of the plates. However, we can't digitize the plates for which we do not have Meta data for e.g. date of the exposure, start time, coordinates etc.

DASCH has recently partnered with the Smithsonian to publish images of the original logbooks. Our hope is that by putting those on the web the public will help transcribe them providing the metadata needed to digitize the plates. We also hope some of them will find comets long since forgotten, the discovery of asteroids, variable stars, galaxies, quasars, supernovae and other exiting astronomical objects. Come learn how you can be a part of this exciting project.

ADVANCED LEVEL ASTRONOMY

Astronomical CCDs: A Personal History, from the Earliest Times through the Kepler Spacecraft and Beyond

Saturday 1 pm - 2 pm, in the Flanders Pavilion, presented by John Geary. The advent of charge-coupled devices (CCDs) less than 40 years ago had the most profound effect on astronomical instrumentation since the introduction of the photographic plate 100 years before. My professional career happened to span the entirety of this new CCD era (so far), from the earliest tiny experimental devices to the truly monster imagers of today. I will relate to you how astronomers learned to use this breakthrough technology, the many difficulties over the years finding reliable vendors, an era of self-designed CCDs when all other suppliers failed, and the later development of industrial-scale scientific CCD production.

The Visual Observer's Guide to CCD Photometry

Saturday 2 pm - 3 pm, in the Flanders Pavilion, presented by John O'Neill. In the last couple of decades CCD's have made photometry more accessible. This opens up a new tool for the visual observer and also opens up a new avenue for astro imagers who would like to delve into the scientific aspect of their hobby.

John's foray into CCD photometry was a long time coming - after decades of purely visual observing of variable stars. In this talk he will share with you the lessons learned and some of the pleasures and pitfalls of CCD Photometry of Variable Stars.

Optical Coating for Astronomical Observatories

Saturday 3 pm - 4 pm, in the Flanders Pavilion, presented by Tony Pirera. This talk will cover the following topics: introduction to spectrum thin films; how we manufacture optical coatings; coating large astronomical mirrors; types of optical coating used for astronomical mirrors; next generation optical coatings used; antireflection coatings for spectrograph; manufacturing filters for CCD imaging; light pollution filters; solar filters including hydrogen alpha filters—how they work and how they are manufactured.

Radio Astronomy for Amateurs

Saturday 4 pm - 5 pm, in the Flanders Pavilion, presented by Jack St. Louis. The Society of Amateur Radio Astronomers (SARA) is a non-profit, scientific, international society organized in 1981 with the sole purpose of supporting amateur radio astronomy. SARA members are dedicated enthusiasts who teach, learn, trade technical information, and do their own observations of the radio sky. Organized in 1981, today SARA has hundreds of members worldwide, who are optical astronomers, ham radio operators, engineers, teachers and non-technical persons. Many members are new to the field, and membership is extended to all who have an interest in radio astronomy.

FRIDAY EVENING INFORMAL TALKS

8:30 pm Friday evening in the Flanders Pavilion. Bruce Beford of the Springfield Telescope Makers will conduct the informal talks. If you wish to contribute a short talk during this session, please register online. Talks are limited to 10 minutes and 20 slides. The time limit will be strictly enforced! A 35-mm slide projector, overhead projector, VCR, and a digital projector will be available for your use. Note that if you plan to use the digital projector, you must bring your own laptop.

SATURDAY SWAP TABLES

7 am to noon Saturday. The Swap Tables (located at the northeast edge of the main camping/parking area) are provided to give amateurs an opportunity to trade, buy or sell their surplus astronomical and telescope related items. (**Important: see Swap Table Policy, Page 7**)

THE STELLAFANE RAFFLE

The famous Stellafane Raffle offers spectacular donated prizes to lucky winners, typically including thousands of dollars worth of optical gear and many desirable astronomy and telescope-making books. Your odds of winning are really good. The money raised goes to support next year's convention and to make capital improvements to the convention site. Tickets are available at the T-shirt table and from designated STM members roaming the site. We appreciate the generosity of our donors and your support by purchasing raffle tickets. Thank you all very much!

OTHER PROGRAMS SUITABLE FOR EVERYONE

Solar Observing

2-3 pm Friday and Saturday, in the observing fields near the Pink Clubhouse and the McGregor Observatory. All attendees with solar filters or projection set-ups are encouraged to share the sun with other attendees. The McGregor will be set up for solar observing as well.

Observing with the Hartness Turret Telescope

8:30 pm on Thursday at the Hartness House in Springfield. Weather permitting, we plan to have an observing session with the Hartness Turret Telescope. We also expect several members of the Antique Telescope Society to have instruments set up on the lawn near the Hartness Turret Telescope, so viewing opportunities through other historic instruments is likely to be had.

The Porter/Hartness Museum of Amateur Telescope Making

Open Friday from 5 pm to 8 pm and Sunday from 9 am to noon. The Porter/Hartness Museum of Amateur Telescope Making is located in the underground rooms at the Hartness House Inn in Springfield. Admission is free. Follow the signs in town to the Hartness House at 30 Orchard Street. Many of the items on display are by or about Russell W. Porter, including the Springfield and Garden telescopes. His artwork traces his arctic exploration years to his work on the 200" Palomar telescope, culminating in his famous cut-away drawings. Other items of interest include early telescopes and mirror making parts. The Hartness turret telescope, with its 10" Brashear objective, may also be inspected.

Friday Evening Videos

Friday at 7 to 8:15 pm in the Flanders Pavilion. Short astronomy documentaries for the whole family.

SATURDAY KEYNOTE PROGRAM

7 pm Saturday, in the hillside amphitheater (In case of inclement weather, the program will be held inside the Flanders Pavilion). John Gallagher, of the Springfield Telescope Makers, will be master of ceremonies.

- Greetings, announcements, children's raffle and raffle drawing
- Stellafane Shadowgram: Andy Paniros
- Presentation of Telescope Competition Awards
- Stellafane Keynote Talk: **Comet Tales: Creating the Giant: Fabricating the Mirrors of the European Extremely Large Telescope** by Christina Dunn

A new generation of astronomical telescopes is taking shape, giants three or four times larger than the world's current largest telescopes. Bringing these massive designs from theoretical possibility to reality will require a revolution in optical fabrication techniques and technologies, combining the craft traditions of master opticians with the cutting edge in robotic machinery. This talk will address the challenges of creating a telescope mirror wider than the wingspan of a Boeing 737 aircraft.

Christina is a Research Associate - Ultra Precision Surfaces in the Department of Physics and Astronomy at University College London (and participated in Stellafane's Mirror Class a few years ago).

Advice, Guidelines, and Policies

To ensure your enjoyment and safety at The Stellafane Convention, please read this section carefully.

Emergencies and First Aid

In case of emergency please contact Security (by the gate) or any STM member. If you have a family service radio, you may contact convention staff via channel 7 (please avoid non-emergency use of this channel at convention). **First aid kits are located in the Bunkhouse, the McGregor Observatory, and the Pink Clubhouse.** We have trained medical staff on site.

Where to Set Up your Telescope

We strongly recommend that you set up your telescope in the fields around the Pink Clubhouse or in the field to the south of the McGregor Observatory. Your telescope does not have to be entered in the competition, and **all telescopes are welcome, commercial or home made.** You may not set up your telescope in a designated parking area. The darkest conditions are available near the Pink Clubhouse, as far south as possible. Please consult the site map as well as the signs posted throughout the convention site for the designated parking locations. Note: You can drive up to the Pink Clubhouse area in daylight hours to drop off and pick up your telescope but there is no extended parking as space is extremely limited. Please move your car to a designated parking area at Stellafane East as soon as possible.

Lighting Policy

Stellafane does not allow open white lights on clear nights, except for one half hour after the Friday and Saturday evening talks end. Vehicular travel after this time is strongly discouraged and is done only at the risk of the operator. Red filter paper for flashlights is available at the Pink Clubhouse and at the Bunkhouse. We thank you for your cooperation.

Laser Pointer Policy

Lasers pointers can be a helpful tools for astronomers, but can be dangerous if not properly used. Direct viewing of a laser-pointer beam, even briefly and at a distance of a kilometer or two, has the potential to cause temporary blindness – the same effect you get right after a flash photo is taken – or afterimages. These effects last anywhere from seconds to minutes. Glare, which is a reduction or loss of central vision, lasts only as long as exposure to the beam. All these effects could be disastrous if they struck a person operating machinery, driving a car, or flying a plane.

To help use our laser tools safely, the Springfield Telescope Makers, Inc. has adopted these recommendations as policy. These are based on the suggestions from the Laser Institute of America and published in May 2005 by Sky and Telescope.

- **Laser pointers are designed to illuminate inanimate objects. Never shine a laser pointer toward any person, aircraft, or other vehicle.**
- **Never look directly into a beam of a laser pointer of any type.**
- **Do not allow children to use a laser pointer unsupervised. Laser pointers are not toys.**
- **If your telescope is equipped with a laser pointer that has a "constant on" setting, do not leave the instrument unattended with the laser switched on.**
- **Do not aim a laser pointer towards mirrors or other shiny surfaces. The reflected beam may inadvertently strike someone in the eye.**
- **Do not aim a laser pointer skyward if you hear or see an aircraft of any kind flying overhead.**

- Laser pointers shall not be used in the Clubhouse observing fields.
- Additional laser use restrictions may be put into place by the Springfield Telescope Makers, Inc. as situations arise.
- The convention staff, at its sole discretion, may terminate or prohibit use of lasers by any person on Springfield Telescope Makers, Inc. property.

Swap Table Policy

For the sake of historical continuity, to preserve the uniqueness of the Stellafane convention and to encourage conventioners to build their own instruments, the Springfield Telescope Makers, Inc. do not allow commercial sales, of any kind, at the Stellafane convention. All swap table sales must comply, in concept, with the above objective but are also specifically subject to the following criteria:

- Only surplus astronomical, telescope and telescope making related items may be sold.
- Each person will be allowed 16 square feet of table or ground space.
- Items which have the appearance of being specifically purchased or manufactured for sale at the Swap Tables may not be sold.
- All sales must take place within the designated Swap Table area only between 7 am and 5 pm, the Saturday of the Stellafane convention.

The Springfield Telescope Makers, Inc. may choose to grant a limited exception to the above policies to astronomy related organizations for their fundraising. Any request for an exemption must be made, in writing, at least one month prior to the convention. If granted, the President of the Springfield Telescope Makers, Inc. will notify the requesting organization in writing.

Any member of the Springfield Telescope Makers, Inc. has the authority to determine whether a party is in compliance with the established regulations. Any person who is found to be in violation of the stated policies will be required to comply. Failing compliance, the offending party will be asked to leave the convention and may be escorted from the premises by convention security.

The Springfield Telescope Makers, Inc. encourages those with questions regarding this policy to contact the Club via the Stellafane web page (www.stellafane.org). During the convention, any questions regarding this policy, the appropriateness of items being displayed, or any information being disseminated should be directed to a member of the Springfield Telescope Makers, Inc.

Food Service

The main food service tent is located just to the south of the T-shirt table. Note: This food service tent is open all night if you need a snack and/or coffee during your observing session.

Food service will be available for Thursday dinner and for Friday breakfast if you are using our new Early Entry Permit option.

Shuttle Bus

The Shuttle Bus makes two stops in Stellafane East, one by the Food Tent and one by the main Camping Area (See Stellafane East Site Map). It makes one stop on Breezy Hill near the Clubhouse.

Family Service Radios

The convention staff uses family service radio channel 7 to facilitate communications during the convention. **Please avoid use of channel 7 when you are at the convention site, except in emergencies.**

2 Meter Repeater: W1STM

There is usually a 2 meter Ham Radio repeater, call sign W1STM, operating at 14,527 MHz on site.

Cell Phone Service

Be advised that cell phone service is "spotty" in hilly southern Vermont. Good coverage is generally available near interstates and town centers, but gets less reliable as you move off into the countryside. At Stellafane, you might have to move about the site to get a connection, but most carriers do have a useable signal at least in some (higher) areas of our site. If you can see Mt. Ascutney to the north, you will likely have service.

Campfires Not Allowed

Open campfires are not permitted. If you are camping and/or cooking on the Stellafane site, you must use approved cooking equipment such as a portable grill or camp stove. Do not cut any trees. Also, always be careful about disposal of cigarette butts.

Golf Carts and ATVs

No personal golf carts or ATVs will be allowed at convention. Only golf carts and ATVs being used for official convention purposes will be allowed.

Generators and Recharging

Use of generators is discouraged at Convention. Properly muffled RV generators and quiet portable generators of 1,000 watts or less may be used between the hours of 9 am to 6 pm in the camping areas only. Generators may never be used in the observing fields, after dark, or at other locations at Stellafane. The generator must not create a hazard. Any complaint of unsafe operation or excessive noise will immediately cause the generator to be banned from operation.

There are outlets along the walls of both the McGregor observatory, and the Flinders Pavilion that may be used for recharging batteries and portable devices. However, the Springfield Telescope Makers accept no responsibility for unattended property.

Pet Policy

The Springfield Telescope Makers, Inc. welcomes you to bring your pets to the Stellafane convention, provided the following rules are followed:

- Pets must be confined, leashed or otherwise under the physical control of a person at all times. Leashes may not exceed 6 feet in length. Pets that are tethered at the campsite cannot be left unattended for more than 30 minutes. Pets may not be tied to trees, bushes, tables or shelter facilities, even when the owners are present.
- Pets must be well-behaved at all times. Pets must be confined in the owner's camping unit during quiet hours (11 pm - 8 am).
- Pet owners are required to pick up after their pets and properly dispose of all pet droppings in trash receptacles.
- Any pet that is noisy, dangerous, intimidating or destructive will not be allowed to remain at the Convention.

Failure to comply with the above rules will result in you and your pet being asked to leave the convention; you may be escorted from the premises by convention security. The Springfield Telescope Makers, Inc. thanks you in advance for helping to make the Stellafane convention more enjoyable for everyone. Enjoy the convention!

Stellafane Endowment Fund

The Endowment Fund is intended to ensure that the birthplace of amateur telescope making is preserved for future generations by providing adequate funding to cover the basic costs of maintaining the Stellafane clubhouse, the Porter and McGregor observatories, and other existing and future buildings and properties owned by the Springfield Telescope Makers, Inc. If you are interested in supporting the endowment fund you may do so by mail or online with our Donation Form at stellafane.org/help/donate-form.html. Thanks!

Lost and Found

The lost and found is located at the t-shirt table at the Bunkhouse.

Stellafane Web Site Wants Your Photos!

The Stellafane web site (<http://Stellafane.org>) will have many photos from this convention, as well as many of the presentations and the winners of the telescope competition available in the weeks following the event. We are always happy to accept photos of convention for publication on the web site.

Additional information on telescope making, Stellafane history and past conventions is also available there.

The Telescope Competition

The Heart and Soul of Stellafane

If you have built a telescope or a special gadget, or restored a historical instrument, we strongly encourage you to enter it in the competition!

Note: You can drive up to the Pink Clubhouse area during daylight hours Friday or Saturday to drop off and pick up your telescope but there is no extended parking as space is extremely limited. Please move your car to a designated parking area at Stellafane East as soon as possible.

Telescopes may be entered in either competition or both competitions if you wish.

First Homemade Telescope Certificate

New in 2013 and continuing this year, in order to further encourage and recognize telescope building, we are offering a certificate of recognition for first time telescope makers. You do not have to enter the competition if you do not want to, but you must bring your first homemade telescope to Breezy Hill and display it. Please register ahead of time online and check in at the judging tent. You will be awarded a certificate recognizing your efforts in building and displaying your first homemade telescope at Stellafane, and your name will be shown on the screen at the Saturday night program.

Optical Competition

Registration for the optical competition will take place on Friday from 5 pm to 8 pm in a tent near the Pink Clubhouse. Keep in mind that if you have registered your instrument online, you must still check in at the tent Friday from 5 pm to 8 pm or your telescope will not be judged! Set up your scope on Breezy Hill before you check in and inform the judges of the location of your scope. If the position of your scope changes it is your responsibility to report its new location to the judges in the Pink Clubhouse. Failure to do so will result in your scope not being judged!

All telescopes in the competition **must be fitted with an eyepiece with a focal length, in millimeters, approximately equal to the focal ratio of the instrument.** Your instrument must be properly collimated before judging begins at 10 pm. Also, **be prepared to point your scope at the star Altair** when the judges arrive. Please note that the judges may inspect your telescope more than once. Therefore, you should remain on the field with your instrument until the preliminary results are announced via loudspeaker.

If the weather permits the completion of the judging on Friday night, the optical judging will be closed for the duration of the convention and optical awards will be presented during the Saturday evening program. If the optical judging cannot be completed Friday night, it will be continued on Saturday night, weather permitting. Additional optical entries may be accepted on Saturday, at the discretion of the judges. To inquire about this possibility, please ask a judging representative in the Pink Clubhouse from 8:30 am to 10 am or from 5 pm to 8 pm on Saturday.

In the event that the competition will have to be continued Saturday, some telescopes that were judged on Friday might need to be judged again. Please inquire with the judges if your scope will need to be available again on Saturday. If the optical judging cannot be completed by the end of Saturday night, a partial field of optical excellence awards may be given, at the discretion of the judges.

Please note that it is the intention of the Stellafane judging committee to have the optical competition completed Friday night, weather permitting. Therefore, to ensure that your instrument is judged you must be registered for the Friday night judging.

Clarification on "small" vs. "large" Newtonians: The small category includes any mirror of 12.5 inches optical diameter or less; the "large" category is for mirrors that are greater than 12.5 inches in diameter.

2014 Optical Judging Chairman: Rick Hunter

Mechanical Competition

Registration for the mechanical competition will be between 8 am and 9:30 am Saturday morning in a tent near the Pink Clubhouse. Keep in mind that if you have registered your instrument online, you must still check in at the tent Saturday morning or your telescope will not be judged. The telescope judging for mechanical excellence will begin at 10 am so please register your telescope as early as possible.

Only telescopes that are operative both mechanically and optically will be accepted in the mechanical competition. The judges will visit the telescopes in several small groups. You must attend your telescope until the end of the competition is announced via

the loudspeaker. Be prepared to describe any special construction techniques and components to the judges. Awards for mechanical design, craftsmanship, special gadgets, restoration of historical instruments and junior telescopes, made by persons less than 16 years of age, will be awarded at the Saturday evening talks.

Mechanical design vs. craftsmanship: the mechanical award is for the design of the instrument, how unique it is compared with prior art, and its effectiveness in providing a useful instrument, while the craftsmanship award is for execution (how well the design was translated into a workable and functional instrument).

2014 Mechanical Judging Chairman: Chris Houghton

Last Year's Competition Winners

OPTICAL

Sandy Chang, Madison, CT, 6-inch f/5 Newt, 1st Place Optical (small)

Steven Benson, Walpole, NH, 6-inch f/8 Newt-Dob, 2nd Place Optical (small)

Dylan Kinsey, Barton, VT, 10-inch f/4.8, 3rd Place Optical (small)

MECHANICAL DESIGN

Pierre Lemay, Blainville, Quebec, 20-inch f/3.9 Newt-Ball, 1st Place Mechanical Design

Dylan Kinsey, Barton, VT, 10-inch f/4.8, 2nd Place Mechanical Design

Carl Lancaster, Riverside, CT, 18-inch f/4.5 Newt-Dob with Carbon-Fiber Collapsible Mast, 3rd Place Mechanical Design

John Colt, Williston, VT, Cable-stayed Take-apart Equatorial Mount, Honorable Mention Mechanical Design

INNOVATIVE COMPONENT

Tom Kasner, Altoona, PA, 14-inch f/4.61 with Bicycle Wheel parts, 2nd Place Innovative Component, Bicycle Components

Carl Lancaster, Riverside, CT, 18-inch f/4.5 Newt-Dob with Carbon-Fiber Collapsible Mast, 1st Place Innovative Component: Truss

Kevin Frederick, Bedford, PA, 17" Off-axis Wide-band Modified Schiefspiegler, 3rd Place Innovative Component: Self Registering Alignment Templates

CRAFTSMANSHIP

Dylan Kinsey, Barton, VT, 10-inch f/4.8, 1st Place Craftsmanship

Pierre Lemay, Blainville, Quebec, 20-inch f/3.9 Newt-Ball, 2nd Place Craftsmanship

Larry Shaper, Thetford Center, VT, 16¼-inch f/4.3 Newt-Dob Lightweight Primary & Scope, 3rd Place Craftsmanship

Carl Lancaster, Riverside, CT, 18-inch f/4.5 Newt-Dob with Carbon-Fiber Collapsible Mast, 4th Place Craftsmanship

SPECIAL AWARD

James Daley, New Ipswich, NH, 3-inch f/15 Lyot Coronascope, 1st Place Special Award

Dominic Fucile, Waquoit, MA, Prototype Cubesat Telescope, 2nd Place Special Award

JUNIORS

Johnny Colt, Williston, VT, 2.1-inch f/10 Solar Tracking Scope; wrote software, made focuser, 1st Place Junior

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